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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Artcle 36 and Rule 70)

Applicant's or agent's file reference Po020007ET	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. **PCT/KR2002/002497**	International filing date *(day/month/year)* **30 DECEMBER 2002 (30.12.2002)**	Priority date *(day/month/year)* 09 SEPTEMBER 2002 (09.09.2002)

International Patent Classification (IPC) or national classification and IPC

IPC7 H01L 21/338

Applicant

ELECTRONICS AND TELECOMMUNICATIONS RESEARCH INSTITUTE et al

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 3 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of _____ sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demamd	Date of completion of this report
29 JULY 2003 (29.07.2003)	17 DECEMBER 2004 (17.12.2004)

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International aplication No.
PCT/KR2002/002497

I. Basis of the report

1. With regard to the elements of the international application:*

[X] the international application as originally filed

[ ] the description:
pages _____ , as originally filed
pages _____ , filed with the demand
pages _____, filed with the letter of _____

[ ] the claims:
pages _____ , as originally filed
pages _____ , as amended (together with any statment) under Article 19
pages _____ , filed with the demand
pages _____, filed with the letter of _____

[ ] the drawings:
pages _____ , as originally filed
pages _____ , filed with the demand
pages _____, filed with the letter of _____

[ ] the sequence listing part of the description:
pages _____ , as originally filed
pages _____ , filed with the demand
pages _____, filed with the letter of _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.
These elements were available or furnished to this Authority in the following language _____ which is

[ ] the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).

[ ] the language of publication of the international application(under Rule 48.3(b)).

[ ] the language of the translation furnished for the purposes of international preliminary examination(under Rules 55.2 and/ or 55.3).

3. With regard to any **nucleotide** and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

[ ] contained inthe international application in written form.

[ ] filed together with the international application in computer readable form.

[ ] furnished subsequently to this Authority in written form.

[ ] furnished subsequently to this Authority in computer readable form

[ ] The statement that the subsequently furnished written sequence listing does not go beyond the disc losure in the international applicationas as filed has been furinshed.

[ ] The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. [ ] The amendments have resulted in the cancellation of:

[ ] the description, pages _____

[ ] the claims, Nos. _____

[ ] the drawings, sheets _____

5.

[ ] This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box(Rule 70.2(c)).**

* *Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed." and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).*

** *Any replacement sheet containing such amendments must be referred to under item I and annexed to this report.*

INTERNATIONAL PRELIMINARY EXAMINATION

International aplication No.
PCT/KR2002/002497

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1~14	YES
	Claims		NO
Inventive step (IS)	Claims	1~14	YES
	Claims		NO
Industrial applicability (IA)	Claims	1~14	YES
	Claims		NO

2. Citations and explanations (Rule 70.7)

This statement is based on the claims 1~14 as originally filed. The claimed invention relates to an apparatus for manufacturing semiconductor device and method for manufacturing semiconductor device by using the same. An apparatus according to the present invention comprises a first chamber having a first substrate; a halogen lamp provided in the upper portion; a second chamber having a temperature-adjustable second substrate holder, a middle film provided in the middle portion of the second chamber, an elevating portion attached to the second substrate holder, a metal depositing portion provided in the upper portion of the second chamber; pumping portions connected to the first chamber and the second chamber; gas injecting portions to the first chamber and the second chamber; and a connecting portion for allowing the sample to reciprocally moving between the first chamber and the second chamber. A method for manufacturing semiconductor device according to the present invention comprises the step of cleaning a substrate into a first chamber; cleaning a substrate into a second chamber; and depositing a metal film, wherein the steps are performed in batch process, without being exposed to outside air.

The following documents have been cited in the International Search Report (ISR):

D1 : JP 2-68927 A(Mitsubishi Electric, Corp) 8 March 1990
D2 : JP 4-155850 A(Hitachi, Ltd) 28 may 1992
D3 : JP 2-1943 A(Nec, Corp) 8 January 1990

D1 discloses an apparatus for manufacturing semiconductor device. The apparatus includes treatment chambers constituted by a sputter chamber to form a metal film; an anneal chamber which enables heat treatment; and a preliminary exhaust chamber adjacent to the anneal chamber and the sputter chamber; a lamp anneal device for wafer heating.

D2 discloses a method for filling fine hole metal. The method comprises the step of placing a substrate in the load lock chamber, heating up to a temperature of 200℃; placing in the sputter etching chamber through a substrate transfer mechanism; introducing Ar and BCl3 gases into the sputter etching chamber; transferring a substrate into a film forming chamber; forming an insulating film.

D3 discloses a method for manufacturing semiconductor device. The method comprises the step of forming a titanium silicide film on the surface; growing an insulating film on the surface; forming contact holes; and forming a nitride film on the titanium silicide film in a low-temperature and ammonia-containing atmosphere.

None of the documents in the International Search Report (ISR), taken alone or in combination, discloses the special combination of features defined in the invention. Furthermore, in the ISR documents there are no suggestion leading a person skilled in the art towards the invention defined by the claims 1~14. Therefore, the invention is novel, involves an inventive step, and has industrial applicability.